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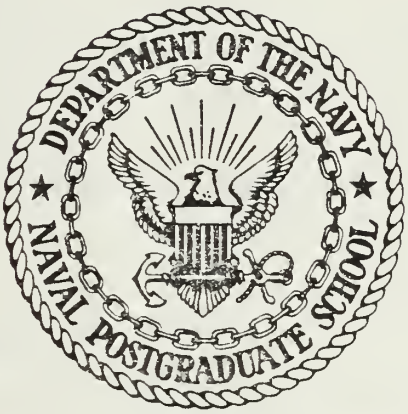

THESIS

CONDUCTING INTEGRATED LOGISTICS OVERHAULS FOR PHASED MAINTENANCE SHIPS HOMEPORTED IN THE WESTERN PACIFIC WITH EMPHASIS ON THE USS STERETT

by

Dennis Willard Hillegas

December 1984

Thesis Advisor: A.W. McMasters

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Conducting Integrated Logistics Overhauls for Phased Maintenance Ships Homeported in the Western Pacific with Emphasis on the USS Sterett

by

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LIST OF ABBREVIATIONS

AAP	Allowance Appendix Page
ADP	Automated Data Processing
AEL	Allowance Equipage List
AFS	Combat Stores Ship
ALID	Automated Library Issue Document
AOIC	Assistant Officer in Charge
APL	Allowance Parts List
AS	Submarine Tender Ship
BOM	Bill of Materials
CAG	Configuration Analysis Group
CCF	Configuration Change Form or Configuration Control File
CG	Guided Missile Cruiser
CHNAVMAT	Chief of Naval Material
CINCLANTFLT	Commander in Chief, U.S. Atlantic Fleet
CINCPACFLT	Commander in Chief, U.S. Pacific Fleet
CO	Commanding Officer
COMNAVLOGPAC	Commander, Naval Logistics Command, U.S. Pacific Fleet
COMNAVSURFLANT	Commander, Naval Surface Force, U.S. Atlantic Fleet
COMNAVSURFPAC	Commander, Naval Surface Force, U.S. Pacific Fleet
COSAL	Coordinated Shipboard Allowance List
CSA	Configuration Status Accounting
CV	Aircraft Carrier
DDG	Guided Missile Destroyer
DLR	Depot Level Repairable
DSRA	Docking Selected Restricted Availability

EOH	End of Overhaul
FF	Frigate
FLR	Field Level Repairable
GS	General Schedule Civilian Service Employee
HM&E	Hull, Mechanical and Electrical
ILO	Integrated Logistics Overhaul
ILR	Integrated Logistics Review
ILS	Integrated Logistics Support
ISEA	In-Service Engineering Agent
ISL	Integrated Stock List
LCC	Amphibious Command Ship
LOEP	List of Effective Pages
LPO	Leading Petty Officer
MAM	Maintenance Assistance Module
MATT	Mobile Assistance Training Team
MIP	Maintenance Index Page
MOC	Master Ordnance Configuration
MRC	Maintenance Requirement Card
MSAT	Maintenance Support Analysis Team
NAVELEX	Naval Electronic Systems Command
NAVELEXSYSENGCEN	Naval Electronic Systems Engineering Center
NAVSEA	Naval Sea Systems Command
NAVSEACEN	Naval Sea Support Center
NAVSUP	Naval Supply Systems Command
NMC	Naval Material Command
NMP	Navy Manning Plan
NPFC	Naval Publications and Forms Center
NSA	Naval Supervising Activity or Navy Stock Account

NSC	Naval Supply Center
NSD	Naval Supply Depot
NSDSA	Naval Sea Data Support Activity
NSRF	Naval Ship Repair Facility
OIC	Officer In Charge
PAG	PMS Analysis Group
PAL	Publication Applicability List
PMP	Phased Maintenance Program
PMS	Planned Maintenance System
PSO	Prospective Supply Officer
QA	Quality Assurance
RADIAC	Radioactivity, Detection, Indication and Computation
RAG	Repair Parts Analysis Group
ROH	Regular Overhaul
ROIC	Resident Officer In Charge
RSS	Ready Service Spare
SECAS	Ship Equipment Configuration Accounting System
SFR	Semi-Annual Force Revision
SHIPALT	Ship Alteration
SHOROC	Shore Required Operational Capabilities
SK	Storekeeper
SLCC	Summary List of Component Changes
SLEC	Summary List of Equipage Changes
SOAP	Supply Operations Assistance Program
SOH	Start of Overhaul
SPCC	Ships Parts Control Center
SPM	Ship Project Manager
SRA	Selected Restricted Availability
SRI	Storeroom Item
STEPS	Ships Technical Publication System

SUADPS	Shipboard Uniform Automated Data Processing System
SUPSHIP	Supervisor of Shipbuilding, Conversion and Repair, USN
TAG	TM Analysis Group
TM	Technical Manual
TMSR	Technical Manual Status Report
TSD	Technical Support Division
TYCOM	Type Commander
WESTPAC	Western Pacific Ocean
WSF	Weapon Systems File
WSFCO	Weapon Systems File Configuration Output
3-M	Maintenance and Material Management

I. INTRODUCTION

A. BACKGROUND

This thesis is a study that was motivated by the concern of the Prospective Supply Officer (PSO) of the USS Sterett for the effective and efficient accomplishment of the Sterett Integrated Logistics Overhaul (ILO). This concern evolved from discussions with the cognizant personnel at Commander, Naval Surface Force, U.S. Pacific Fleet (COMNAVSURFPAC) responsible for planning the ILO with the Commander, Naval Logistics Command, U.S. Pacific Fleet (COMNAVLOGPAC). The unique situation of the Sterett as the only ship homeported in Subic Bay, R.P., having to accomplish the ILO during a four month Docking Selected Restricted Availability (DSRA) and the uncertainty of the ILO plans for all Western Pacific Ocean (WESTPAC) Phased Maintenance Program (PMP) ships alerted the Sterett PSO to study and become more knowledgeable about the situation.

B. PRIMARY RESEARCH QUESTION

The importance of the ILO should not be underestimated in that it provides a complete validation of the shipboard equipment configuration records and corresponding repair parts, technical manuals, and preventative maintenance documentation support. The effectiveness of the ILO directly affects the ship's logistics readiness effectiveness for the subsequent five years. The primary research questions of this thesis are: "What are the plans for accomplishing Integrated Logistic Overhauls on Phased Maintenance Program (PMP) ships homeported in the Western Pacific?" and "In particular, what are these plans for the USS Sterett?"

C. SCOPE OF THE RESEARCH

The scope of this thesis is limited to the plans for ILO accomplishment during the four month DSRA which normally occurs once every five years of the PMP maintenance cycle. The annual updates to the ILO, known as the Integrated Logistics Reviews (ILRs), accomplished during the three month Selected Restrictive Availabilities (SRAs) for the remaining four years of the maintenance cycle are not considered in this thesis. Accomplishing ILRs has not presented any major problems to the PMP ships and the ILO sites. However, the recent change from the normal eight to ten month ILO to a four month ILO creates a major challenge for the ILO sites and PMP ships.

D. PREVIEW

Chapter II provides an overview of the origins of ILO and ILR and the ILO organizational hierarchy. Chapter III then presents a discussion of the tasks and responsibilities of the various activities directly involved with the ILO. This discussion is time-sequenced to provide a better understanding of the process from the pre-ILO save planning, ILO execution and post-ILO perspectives. Chapter IV examines the WESTPAC ILO sites' capabilities, provides the current plans for the Sterett ILO, and analyzes important issues affecting WESTPAC ILOs. Chapter V will conclude with specific short term recommendations for the Sterett ILO and long term recommendations for WESTPAC ILOs.

II. INTEGRATED LOGISTICS OVERHAUL (ILO) ORIGINS AND ORGANIZATION

A. INTRODUCTION

The purpose of this chapter will be to provide background information relating to the origins and evolutions of the ILO and ILR programs. Also, general responsibilities of the ILO program managers, ILO organizational structure, and ILO publications are addressed in this chapter. This information lays the groundwork for subsequent chapters of this thesis.

B. THE EVOLUTION OF ILO

The ILO Program evolved from the Supply Operations Assistance Program (SOAP). The basic Soap function was designed to ensure that allowances of repair parts supported the ship's configuration as reflected in the Coordinated Shipboard Allowance List (COSAL). A ship's repair parts, offloaded to the SOAP site, were compared to allowances and adjustments made to ensure that the ship departed an overhaul with required allowances of repair parts on board.

In the late 1970's numerous problems were identified that had adversely affected fleet maintenance and combat readiness of fleet units. Evidence has shown that the following types of maintenance support problems existed:

a) The ship's actual configuration was not reflected in the ship's Start of Overhaul (SOH) COSAL. Therefore, maintenance of a COSAL during an overhaul period was often in error and repair part allowances did not support requirements;

b) Required technical manuals were not on board or did not support the ship's actual configuration;
c) Required Planned Maintenance System (PMS) software and material requirements were frequently not on board or did not support the ship's actual configuration;
d) Test equipment inventories and allowances did not support prime equipments actually on board; and
e) Major incongruities existed between COSAL, PMS and Technical Manual (TM) support documentation and were often inconsistent with the ship's actual configuration.

In response to these problems, Fleet Commanders-in-Chief initiated a series of actions to integrate the maintenance support elements of Integrated Logistics Support (ILS) by expanding the basic SOAP function into an ILO Program. The ILO Program was designed to encompass those functions required to meet two objectives. The primary objective was to improve fleet readiness by providing a ship with logistics support that accurately reflected the ship's configuration. The secondary objective was to train fleet personnel to use and maintain the products provided in order to sustain the high level of support during the ship's operational period.

As a result of fleet logistics support initiatives, the ILO Program was formally established by the Chief of Naval Operations in 1980 under the program management of the Chief of Naval Material (CHNAVMAT) with the Naval Sea Systems Command (NAVSEA) AS CHNAVMAT's executive agent. [Ref. 1: pp. 1, 3]

C. ILO RESPONSIBILITIES

The general responsibilities defined herein are those related to ILO Program management, implementation and maintenance.

1. CHNAVMAT

CHNAVMAT is the overall ILO Program manager and is responsible for:

a) Providing overall program guidance;
b) Monitoring implementation;
c) Supporting funding and personnel ceiling requirements;
d) Promulgating ILO Program policy and technical and procedural guidance to elements of the Naval Material Command (NMC); and
e) Promulgating ILO Program technical and procedural guidance to fleet components of the ILO organizational structure.

2. NAVSEASYSCOM

NAVSEA is CHNAVMAT'S executive agent for implementation and maintenance of the ILO Program and is responsible for:

a) Developing and providing technical guidance (including procedures for the functions of the ILO process) to Fleet Commanders-in-Chief;
b) Providing direction to shore activities to coordinate with and support ILO's;
c) Providing ILO sites with functional and technical training through a Mobile Assistance Training Team (MATT);
d) Ensuring the integrity and availability of the central configuration status accounting records (the Weapons System File (WSF) and the Master Ordnance Configuration (MOC) File);
e) Defining data relationships between the Technical Manual (Ship's Technical Publication System (STEPS)), PMS data bases and the ship configuration status accounting system; and

f) Planning, programming and budgeting resources for NAVSEA's technical support of the ILO Program. [Ref. 1: pp. 3-4]

D. ILO ORGANIZATION

The ILO organizational structure is divided into two major components. One consists of shore based elements of the Naval Material Command (NMC) which are under both the technical and operational control of CHNAVMAT. The other component consists of fleet shore based elements of the Fleet Commanders which have operational and administrative control of the ILO sites. Figure 2.1 depicts the ILO Program organizational structure of fleet and shore commands which have roles and responsibilities in the ILO process. [Ref. 1: p. 5]

1. Naval Material Command

The primary role of the NMC components of the ILO organizational structure are:

a) Chief of Naval Material (CHNAVMAT) is the overall Program Manager.
b) Naval Sea Systems Command (NAVSEA) acts as CHNAVMAT's executive agent in developing and maintaining the ILO Program.
c) The Naval Supervising Activity (NSA) is the cognizant Naval Shipyard or Supervisor of Shipbuilding (SUPSHIP) tasked with configuration status accounting functions and providing logistics support for Ship Alteration (SHIPALT) changes during availabilities.
d) The Naval Sea Support Center (NAVSEACEN) supports the ILO PMS and configuration status accounting function.
e) Naval Sea Data Support Activity (NSDSA) supports the ILO in technical manual functions.

f) In-Service Engineering Agent (ISEA) provides technical assistance to the NSA and the ILO sites to ensure that systems under the ISEAs cognizance are properly supported.

g) Naval Supply Systems Command (NAVSUP) coordinates and directs the activities of the Inventory Control Points (ICPs) and Naval Supply Centers (NSCs) in support of the ILO Program.

h) Ship's Parts Control Center (SPCC) maintains the Navy's central configuration status accounting data base (the Weapon Systems File) and provides support documentation (i.e., COSALs, configuration data reports, etc.).

i) Naval Publications and Forms Center (NPFC) supports ILO technical manual requirements.

j) Naval Supply Centers (NSC) provides local administrative and Automated Data Processing (ADP) support to the ILO sites through local host/tenant agreements.

k) Naval Electronic Systems Command (NAVELEX) interfaces with the ILO sites on all matters related to logistics support of equipment under NAVELEX cognizance.

l) Naval Electronic Systems Engineering Centers (NAVELEXSYSENGCEN) provides direct support to the ILO sites located within their assigned geographic areas on problems related to electronic equipment support.

2. Fleet Shore Activities

The primary role of the fleet shore activity components of the ILO organizational structure are:

a) Commander-in Chief, U.S. Atlantic Fleet(CINCLANTFLT) and Commander-in-Chief, U.S. Pacific Fleet (CINCPACFLT)provide for overall administration and operation of the ILO sites.

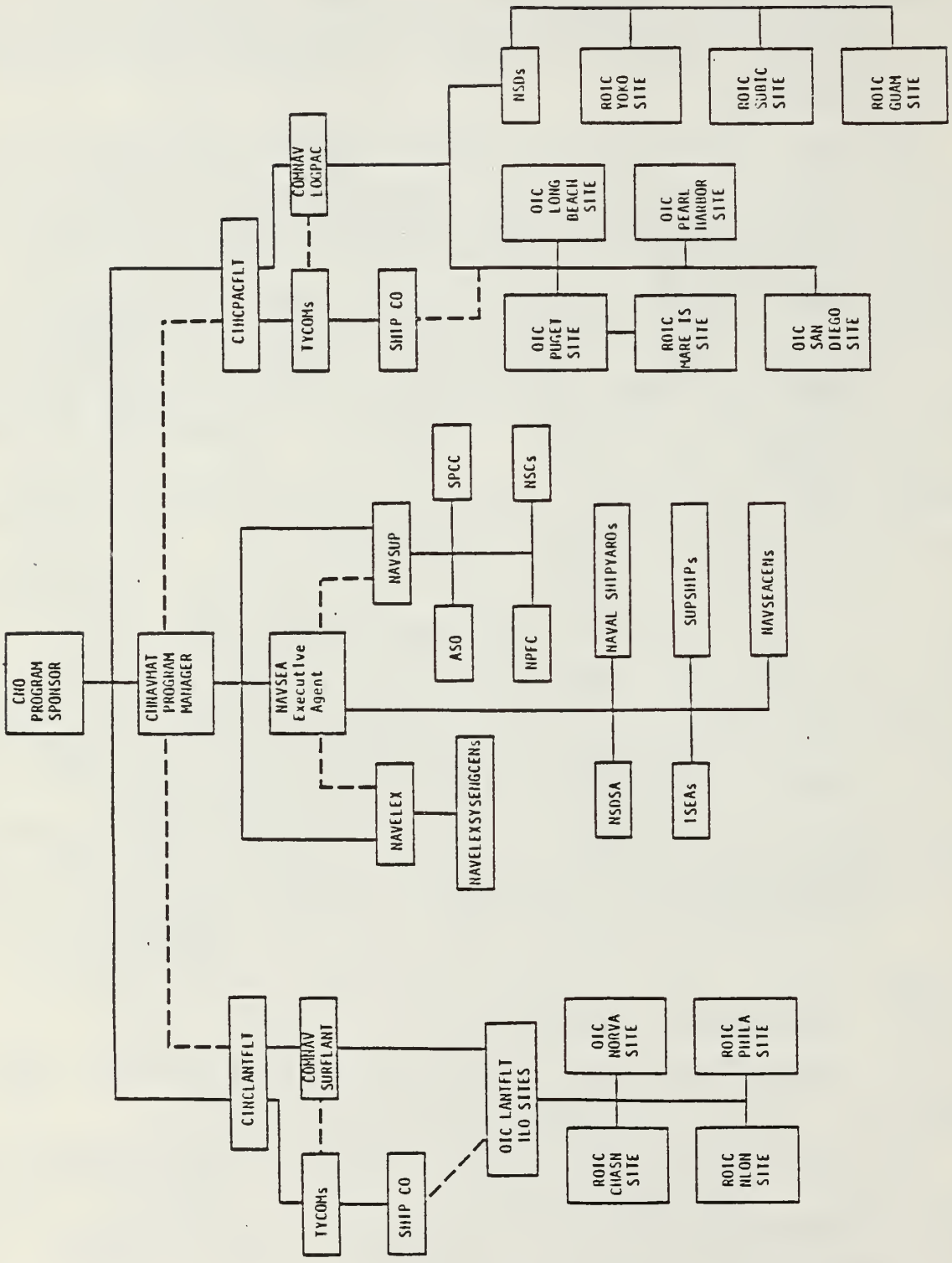

Figure 2.1 ILO Program Organizational Structure.
[Ref. 1: p. 6]

b) Type Commanders (TYCOM) develop and promulgate TYCOM directives that define specific requirements for ship, squadron and group commanders participation in the ILO process.

c) Commander, Naval Logistics Command, U.S. Pacific Fleet (COMNAVLOGPAC) and Commander, Naval Surface Force, U.S. Atlantic Fleet (COMNAVSURFLANT) are designated by CINCPACFLT and CINCLANTFLT, respectively, as the principal agent for operation and administration of the ILO Program in the fleet.

d) A ship's Commanding Officer (CO) ensures that a complete and accurate ILO is performed on the ship. The ILO is essentially a ship's force self-help effort, and, although it is conducted off ship, it is ultimately a ship's force responsibility.

e) The Officer-in-Charge (OIC) at the ILO Site conducts the ILO in accordance with the technical procedures established in the ILO Policy and Procedures Manual.

3. Fleet Commanders

The Fleet Commanders-In-Chief are responsible for:

a) Administration and operation of ILO sites:

b) Conducting ILOs in accordance with procedural guidance provided by CHNAVMAT/NAVSEA;

c) Providing adequate personnel to accomplish the ILO and training of key personnel;

d) Designating ILO sites;

e) Designation of ships to receive ILOs; and

f) Planning, programming, budgeting and executing resources in support of fleet responsibilities to the ILO Program. [Ref. 1: pp. 5-7]

E. ILO PUBLICATIONS AND TRAINING

NAVSEA is responsible for the development and maintenance of the ILO publications and training courses listed in Table I. The ILO Policy and Procedures Manual, Volumes 1-7, provide the administrative structure and detailed technical procedures for accomplishing the functional elements of the ILO program. The ILO handbooks provide specific procedural guidance in addition to or in lieu of procedures contained in Volumes 1-7 of the ILO Policy and Procedures Manual. The 3-day COSAL Use and Maintenance training course is designed to provide the ship's personnel from the various work centers with the knowledge necessary to identify and correct basic equipment/system repair part support problems. This training is accomplished during the ILO to provide ship's force personnel the ability to maintain and possibly improve the degree of logistics readiness achieved by the ILO.

F. THE EVOLUTION OF ILR

The Integrated Logistics Review (ILR) concept materialized as Navy managers saw the necessity of performing Integrated Logistics Overhaul (ILO) functions during limited availabilities. An Integrated Logistics Overhaul is designed to be accomplished during any four month or longer period while a ship is undergoing a major availability. In the past, ship modernization overhauls were routinely scheduled at four to six year intervals and a majority of the configuration changes were accomplished at these times. For some types of ships, most notably Phased Maintenance Program (PMP) ships, these modernization overhauls have been extended to eight to ten year intervals or eliminated altogether. Now, fleet modernization is accomplished in steps during progressive industrial availabilities rather than during periodic overhauls. As a result of the PMP

TABLE I

ILO POLICY AND PROCEDURES MANUAL VOLUMES,
ILO HANDBOOKS AND TRAINING COURSES

ILO POLICY AND PROCEDURES MANUAL

VOLUME 1	ORGANIZATION AND ADMINISTRATION
VOLUME 2	CONFIGURATION ANALYSIS AND COSAL MAINTENANCE
VOLUME 3	TECHNICAL MANUAL (TM) PROCEDURES
VOLUME 4	PLANNED MAINTENANCE (PMS) PROCEDURES
VOLUME 5	TRAINING
VOLUME 6	REPAIR PARTS ANALYSIS PROCEDURES
VOLUME 7	INTERNAL AUDIT AND QUALITY ASSURANCE

ILO HANDBOOKS

EXECUTIVE HANDBOOK
"Q" COSAL REPAIR PARTS ANALYSIS
ILO SUBMARINE UNIQUE
SUADPS REPAIR PARTS ANALYSIS
PMS REPAIR PARTS ANALYSIS
* INTEGRATED LOGISTICS REVIEW
* OPERATING SPACE ITEMS
* TEST EQUIPMENT

* UNDER DEVELOPMENT

TRAINING COURSES

3-DAY COSAL USE AND MAINTENANCE

maintenance philosophy and improved equipment design, more and more equipment configuration changes can be and, in fact, are accomplished during the ship's normal operating

cycle. These developments dictate that the ship's logistics support be updated at more frequent intervals than in the past. [Ref. 2: p. 1]

There has been much confusion over what procedures should be used to update logistics support of PMP ships. Initial plans for PMP ILOs included configuration analysis and COSAL use and maintenance training, as well as a technical manual review, a PMS review and a repair parts review for newly installed equipment and for equipment identified by the configuration analysis process as possibly having inadequate support. Each of the analyses was reduced significantly from the existing ILO procedures so that it could be accomplished during each annual SRA. These procedures, named ILR, addressed only new systems and existing systems identified as having logistics support problems. [Ref. 2: p. 1]

Due to the reduced scope of each ILR, a complete baseline analysis of configuration, repair parts, technical manuals, and PMS documentation would not be accomplished. In order to improve the totality of the logistics support readiness of the PMP ships closer to that achieved through the ILO process, consideration was given to breaking up the ILO process into several sections to be completed over the period of several SRAs. While this method would achieve the goal of 100% validation in each analysis, it would take too long to accomplish the entire ILO process. [Ref. 3: p. 1-2]

Then, attention was turned to developing definitive ILR procedures which would provide guidance for conducting various levels of analyses for configuration, repair parts, PMS, and technical manuals. These procedures would be applicable for the ILR during each annual SRA/DSRA. The scope and detail of the analyses would be jointly determined by the ship and the ILO site OIC based upon the ship's needs and available time and shipboard personnel to accomplish the

ILR. The procedures would be flexible to permit specific, reduced scope analyses or 100% complete validations of all four areas. However, until these ILR procedures are completely written, analyzed, and approved by the cognizant activities, NAVSEA has implemented a test program whereby PMP ships would be provided logistics overhauls using the existing ILO procedures. In order to accomplish this extensive process during the four month DSRA, contractor support personnel is being used to accomplish certain ILO functional analyses. The USS Sterett is not included in this test program. [Ref. 2]

Early feedback from these tests has indicated that the contractor's performance has been poor and has been detrimental to the ILO validation and purification processes. As a consequence, the concept of using contractor support is being re-evaluated. Based upon this information and the guidance cited above, COMNAVSURFPAC and COMNAVLOGPAC have decided upon a different course of action for the upcoming Sterett ILO. The Sterett ILO, which will be detailed in Chapter IV, will use existing ILO procedures without the assistance of contractor support and the complete ILO will be conducted over several SRAs. [Ref. 4]

The evolution of ILRs is continuing as evidenced in the discussion above. Until the final form and all ramifications of the ILR procedures are completely analyzed, PMP ships such as the Sterett will continue to use existing ILO procedures. [Ref. 4] Based upon this premise and present plans for the Sterett ILO, this thesis will not address the ILR topic any further.

G. SUMMARY

This chapter has provided background information on the origin, evolution, and organizational structure and

responsibilities of the ILO Program. Also provided are recent developments in the evolution of the ILO Program in respect to its hybrid, the ILR. While the ILR is pertinent to the PMP ships on a long term basis, it is presently still under study and development and is provided in this chapter as discussion relative to the Phased Maintenance Concept. Until the ILR procedures and all ramifications are properly addressed, the plans for conducting logistics overhauls onboard PMP ships will include the use of contractor support to augment ILO manning. This is done in order to conduct a complete ILO during the four month DSRA. During each annual SRA, configuration updates will be accomplished for systems removed or added and commensurate actions will be taken to update the repair parts, technical manuals, and PMS support. Based upon this information, the remaining chapters of this thesis will concentrate on the issue of conducting ILOs, not ILRs, on the Sterett and other WESTPAC homeported PMP ships.

III. ILO PROCESS AND SITE ORGANIZATION MANNING

A. INTRODUCTION

This chapter will provide the ILO organizational structure, manning requirements, and specific responsibilities of ILO personnel and other activities involved with the ILO. Also, the four functional areas of the actual ILO process, ILO products, and post-ILO responsibilities are discussed.

B. ILO SITE ORGANIZATIONAL STRUCTURE

Figure 3.1 depicts the functional organizational structure of a typical ILO site. Actual site organization may vary depending on the site size, ship loading factors and other local differences. In conducting an ILO, the functions listed in the following paragraphs are to be performed, regardless of the administrative organization. The Fleet Commander is responsible for approving the actual organizational structure of the ILO sites under their command. [Ref. 5: p. 3-1]

C. ILO SITE STAFF AND MSAT MANNING REQUIREMENTS

Since staffing of ILO sites is a function of the Fleet Commander, the methodology employed to fulfill this obligation to the ILO is dictated by various factors such as SHOROC, NMP, total fleet assets, etc. In carrying out this staffing function, however, it is essential that key positions be filled by personnel who meet the minimum requirements specified below. Minimum ILO site staff training requirements are detailed in ILO Policy and Procedures Manual, Volume 5. [Ref. 5: p. 3-5]

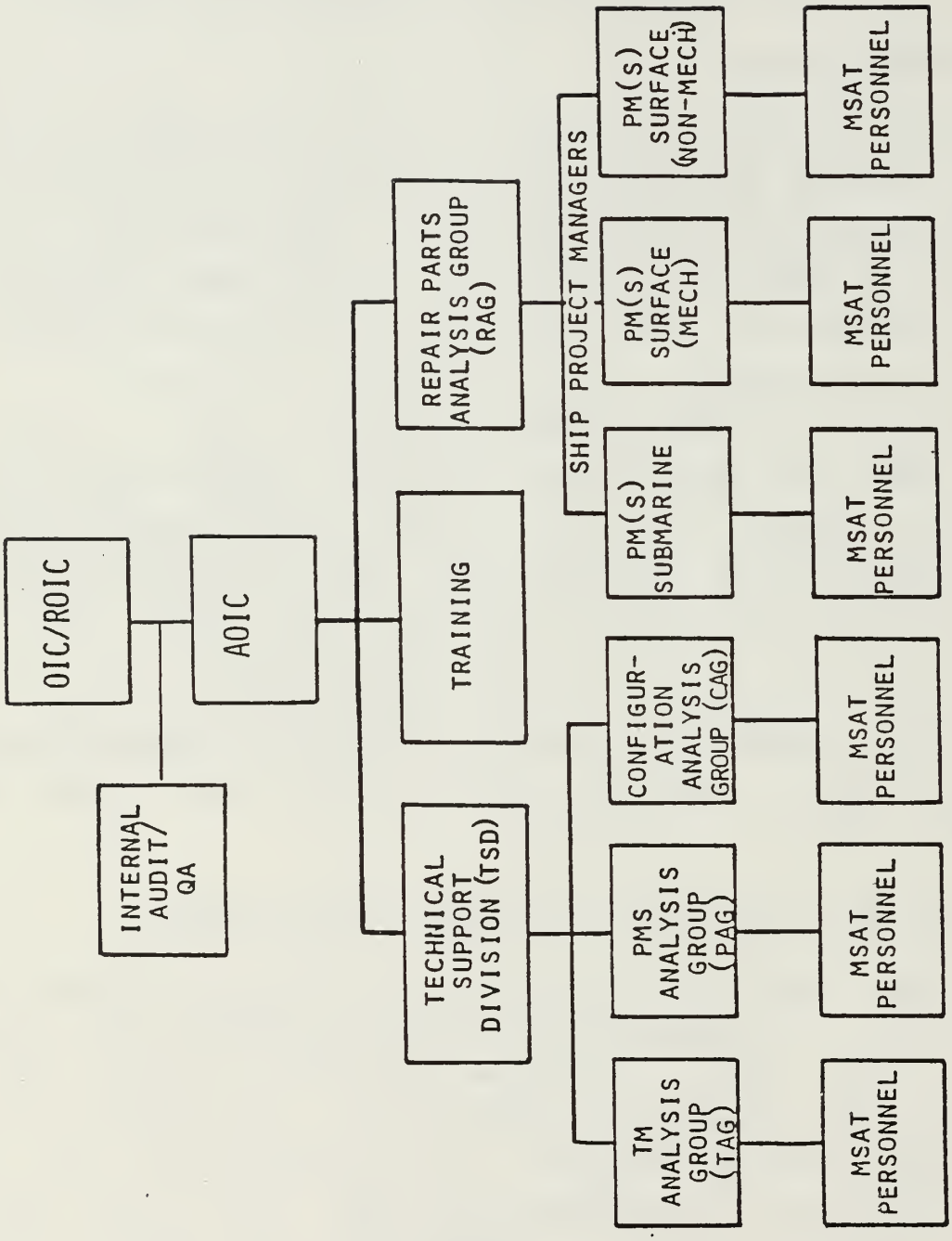

Figure 3.1 ILO Site Functional Organization.
[Ref. 5: p. 3-2]

1. ILO Site Staffing Requirements

a. The Officer in Charge (OIC) (or ROIC) is clearly pivotal in the successful accomplishment of an ILO. Individuals selected for this demanding position should have previously demonstrated strong motivation, leadership and technical traits. The OIC/ROIC will typically be a Supply Corps Officer or senior enlisted Storekeeper; however, a qualified individual from the maintenance community could certainly be assigned this function.

b. The Assistant Officer in Charge (AOIC) position (if assigned) will be filled by active duty military personnel. This position could be filled by an individual with either shipboard maintenance or supply expertise. If the OIC is a Supply Corps Officer (or Chief Petty Officer), it is desirable that the AOIC position be filled by an individual from the maintenance ratings to ensure a proper balance between maintenance and supply expertise.

c. The Internal Audit and Quality Assurance position can be filled by either military or civil service personnel. In most medium and large sites, this will be a full-time position. Personnel assigned to this function should have a minimum of 10 years shipboard maintenance experience in either the Hull, Mechanical and Electrical (HM&E), electronic or ordinance equipment area. In addition, familiarity with inventory procedures is beneficial.

d. The Technical Support Division (TSD) Director position can be filled by either military or civil service personnel who should have a minimum of 15 years shipboard maintenance experience involving the use of Technical Manuals, PMS, COSAL and configuration data in the maintenance of shipboard equipment. This position should not be filled by supply personnel.

e. The Training position should be filled by military or civil service personnel with a minimum of 10 years shipboard maintenance experience. Individuals assigned to this position should also be qualified Navy instructors.

f. The Repair Parts Analysis Group (RAG) Director position may be filled by either civil service or military personnel. In either case, such individuals should have at least 10 years of shipboard repair parts inventory management experience as a storekeeper. In addition, the RAG director should be a fully qualified SPM who has managed a SOAP or an ILO repair parts analysis.

g. The Technical Manual Analysis Group (TAG) Supervisor should have a minimum of 10 years shipboard experience in the repair, operation and maintenance of HM&E, electronic or ordinance systems. Because most TM problems occur in the HM&E area, individuals with experience in main propulsion auxiliary systems are desired.

h. The PMS Analysis Group (PAG) Supervisor should have a minimum of 10 years experience in the operation, repair and maintenance of HM&E, electronic or ordnance systems. The position may be filled by either military or civil service personnel.

i. The Configuration Analysis Group (CAG) Supervisor should have a minimum of 10 years experience in the operation, repair and maintenance of HM&E, electronic or ordnance systems and configuration status experience. This position may be filled by either military or civil service personnel. The CAG supervisor should also be familiar with both PMS and TM functional areas since these functional areas are directly affected by configuration.

j. The Ship Project Managers (SPM) will normally be experienced Chief Storekeepers (E-7, E-8, E-9). Each site will have different experience requirements depending upon the types of ships normally overhauled. Sites involved in

conducting ILOs on submarines, nuclear powered surface ships and mechanized ships will communicate their special requirements to detailers via the administrative chain of command to ensure operational experience of SPMs matches the specialized needs of those ship types regarding repair parts support and documentation requirements. [Ref. 5: pp. 3-5 to 3-7]

2. MSAT Manning Requirements

a. MSAT members should be individuals who will return to sea with the ship after overhaul. While assigned to the ILO site, they will receive extremely valuable training and practical experience in the analysis and correction of maintenance support problems. They will become a valuable nucleus of technicians who will be able to solve emergent problems after overhaul and also ensure that the ship takes full advantage of the ILO products. Recommended MSAT manning requirements are shown in Appendix A for common ship types. When using this data, it must be understood that technical expertise requirements are concentrated in the CAG, TAG and PAG functional areas. Most of these individuals will also work in the RAG function, but the technical functions outside the repair parts purification area drive the requirements for special ratings and expertise.

b. The LPO of the MSAT should be a Senior Petty Officer from one of the principal maintenance ratings with demonstrated strong leadership ability. The effectiveness of the MSAT is a direct function of this individual's capabilities and enthusiasm.

c. A COSAL Maintenance Storekeeper (SK) will be designated by the ship to perform the duties of COSAL Maintenance SK throughout the overhaul. This individual should be an experienced SK and should be targeted as the post-overhaul COSAL Maintenance SK since much of his training during the

ILO will apply directly to the performance of this critical function during the operating cycle. [Ref. 5: p. 3-7]

D. PRE-ILO PLANNING RESPONSIBILITIES

The ILO Policy and Procedures Manual identifies specific responsibilities and actions required in the planning for the ILO. The purpose of this section is to address those activities that perform the key events required in the proper planning for conducting an ILO.

1. ILO Site

In addition to being responsible for conducting an ILO, the ILO site planning responsibilities include:

a) Establishing necessary interfaces between the ILO site, ship, TYCOM and NSA;
b) Conducting an ILO pre-overhaul command briefing for the ship covering the ILO processes and specific details relevant to the ship;
c) Providing to the ship a breakdown of the detailed composition of the ship's Maintenance Support Analysis Team (MSAT);
d) Developing and providing to the ship, based upon the duration of the availability period, ILO milestone charts for all tasks/events;
e) Identifying to the ship the off-load requirements for materials and documentation required in performing an ILO, i.e., ship's repair parts, technical manuals, old COSALs, etc.; and
f) Assisting the ship in developing an ILO training schedule for ship's personnel. [Ref. 1: p. 9]

2. Ship

The ship's pre-ILO planning efforts will have a direct impact on the quality of the ILO. The successful execution of an ILO is directly proportional to the quality of people provided and the degree of planning and command support. The key events in a ship's pre-ILO planning effort include:

a) Designating a leading Petty Officer and MSAT personnel who are adequate in both numbers and expertise to meet the functional requirements of the ILO;
b) Developing an off-load plan for all materials and documentation involved in the ILO process;
c) Establishing and ILO training schedule;
d) Ensuring that key maintenance and supply personnel, in addition to those assigned to the ILO, attend the COSAL Use and Maintenance training course; and
e) Coordinating the off-load of all required materials and documentation to the ILO site. [Ref. 1: pp. 9-10]

3. Naval Supervising Activity (NSA)

Prior to the availability period the NSA performs tasks which support the ILO process. These include, but are not limited to:

a) Identifying configuration changes to be accomplished during the availability period, based on SHIPALT data and scheduled repair efforts;
b) Providing a listing of planned configuration changes to SPCC for Weapon Systems File (WSF) update, with a copy to OIC, ILO site at SOH; and
c) Turning over to the ILO site all ILO related materials and/or documents received through the SHIPALT process. [Ref. 1: p. 10]

4. Ship's Parts Control Center (SPCC)

SPCC performs certain pre-ILO events that directly support the ILO process. These include, but are not limited to:

a) Maintaining the Navy's central configuration status accounting data base (the Weapon Systems File (WSF)) and its subordinate files including an automated linkage with the Master Ordnance Configuration (MOC) File for ordnance systems;
b) Updating the WSF, prior to production of a SOH COSAL, to reflect all planned configuration changes submitted by the NSA; and
c) Providing to the ILO site, approximately one month prior to the availability period, the SOH COSAL, related supply aids and other support documentation required by the ILO site. [Ref. 1: p. 10]

5. Naval Sea Support Center (NAVSEACEN)

The applicable NAVSEACEN (PAC OR LANT) performs tasks which provide direct support to the ILO process. The pre-ILO tasks include, but are not limited to:

a) Providing the ILO site with a copy of all Hull, Mechanical and Electrical (HM&E) validation aids and reports that reflect the results of the Ships Equipment Configuration Accounting System (SECAS) pre-overhaul validation effort;
b) Providing copies of SECAS Electronics reports reflecting the validation effort;
c) Serving as the technical point of contact with ILO site regarding Configuration Status Accounting (CSA) and coordinating the ILO on-site technical assistance efforts; and

d) Interfacing with the ILO site and providing assistance and required documentation to support the ILO PMS analysis effort. [Ref. 1: pp. 10-11]

6. Naval Weapons Station (NWS) Concord

NWS Concord provides the ILO site with a ship's ordnance configuration documentation to be used in the ILO process. These documents include, but are not limited to:

a) Master Ordnance Configuration (MOC) Report which lists the ship's current ordnance configuration and Ordnance Alteration (ORDALT) data; and
b) Ship Alteration Management Information System (SAMIS) Ordnance Module (SOM) Overhaul Forecast Report which lists planned ordnance configuration changes to be accomplished during the availability period and projects the ship's EOH Ordnance configuration. [Ref. 1: p. 11]

7. Naval Electronic Systems Command (NAVELEX)

NAVELEX interfaces with the ILO site on all matters related to logistics support of electronic equipment under NAVELEX cognizance. NAVELEX performs the following basic tasks which supports the ILO process:

a) Maintains and provides to the ILO sites the COSAL for RADIAC; and
b) Provides guidance to Naval Electronic Systems Engineering Centers (NAVELEXSYSENGCENs) on matters related to ILO implementation at sites located within their assigned geographic areas. [Ref. 1: p. 11]

E. ILO EXECUTION RESPONSIBILITIES

The ILO is a complex operation through which integrated maintenance support is verified, documented and provided to

a ship upon completion of an availability. The successful accomplishment of the ILO objectives is dependent upon the proper execution of the ILO program usually attributed to the following:

a) Demonstrated interest and support by the ship's Commanding Officer;
b) Assignment of highly motivated and qualified MSAT personnel;
c) ILO site leadership and management attention to technical and operational matters;
d) Adequate training of ILO site staff and MSAT personnel;
e) Internal audit and review of the ILO analysis and production efforts; and
f) Performance of assigned responsibilities by the principal activities involved in the ILO execution process.

The basic responsibilities defined in this section are those of the three principal activities involved in ILO execution. The established interface and responsibilities between the ship, ILO site and NSA directly affect the execution of the ILO. Detailed responsibilities of the ship, ILO site and NSA are provided in the ILO Policy and Procedures Manual and NAVSEAINST 4441.3. [Ref. 1: pp. 11-12]

1. ILO Site

The basic responsibilities of the ILO site in the execution of the ILO are:

a) To provide adequate training and supervision of ship's force personnel assigned to the ILO site;
b) To conduct the ILO in accordance with the technical procedures in the ILO Policy and Procedures Manual;

c) To conduct audits and reviews to ensure that the ILO functions are performed in an accurate and timely manner;
d) To provide monthly ILO progress reports to the ship throughout the availability and to advise the CO of any problems affecting the ILO effort;
e) To establish a direct working relationship with the NSA; and
f) To backload the ship with logistics support that reflects the ship's EOH configuration. [Ref. 1: p. 12]

2. Ship

The basic responsibilities of the ship in the execution of the ILO are:

a) To ensure that personnel attend ILO training in accordance with established schedules;
b) To provide to the ILO site all materials and documents involved in the ILO process, including a current inventory of bulkhead mounted spares and test equipment not off-loaded to the ILO site;
c) To transfer designated MSAT personnel to the ILO site upon completion of the off-load;
d) To coordinate with the ILO site on all matters related to configuration changes, PMS, TMs, test equipment and repair parts;
e) To submit Configuration Change Forms (OPNAV 4790/CKs) to the ILO site for all changes accomplished by the ship during the availability;
f) To conduct periodic reviews and audits of the ILO process to ensure the ILO site is performing its assigned tasks; and
g) To coordinate with the ILO site for the backloading of the ship's logistics support documentation and material. [Ref. 1: pp. 12-13]

3. NSA

The basic responsibilities of the NSA that directly affect ILO execution are:

a) To act as the central control agent and focal point for all matters related to configuration status accounting and its documentation during the availability; hy on

b) To establish a close working relationship with the ILO site to coordinate the flow of configuration change data; and

c) To provide to the ILO site all ILO materials and documentation received during the availability, for incorporation into the ship's load. [Ref. 1: p. 13]

F. ILO FUNCTIONAL PROCESS

The ILO process is designed to detect and correct as many configuration and logistics support problems as possible during an availability period. This is accomplished through analysis in four functional areas:

a. Configuration;
b. Repair Parts;
c. Planned Maintenance; and
d. Technical Manuals.

The analysis effort in each functional area is performed by ILO Analysis Groups cited below with specific responsibilities for verification of accurate configuration and related ILO products. The interaction between these ILO Analysis Groups and key external activities (see section G of this chapter) resolves configuration and support discrepancies resulting in the update of various support systems and documentation.

The functional responsibilities of each Analysis Group are the core of the ILO program. Both formal and on-the-job

training is also provided to ship's force personnel under the direction and guidance of the ILO site staff. Figure 3.2 provides an overview of the ILO Analysis Group functions and internal relationships. [Ref. 1: p. 14]

1. Configuration Analysis Group (CAG)

The ship's configuration is the basis for performance of the ILO functions. Identification of correct ILO requirements is dependent upon the accuracy of the ship's configuration baseline. Therefore, the configuration analysis and COSAL maintenance tasks of verifying the accuracy and maintaining the ship's configuration and related products are the keystone to the performance of an ILO.

The CAG is responsible for all matters related to configuration status accounting, verification and COSAL update functions as specified in the ILO Policy and Procedures Manual, Volume 2, Configuration Analysis and COSAL Maintenance. The CAG serves as the single point of contact with the other Analysis Groups, the NSA and other activities on all issues related to configuration. To meet the objectives of the configuration analysis function the CAG performs the following:

a) Ensures all documents and aids required to perform CAG procedures are available;
b) Assembles the SOH COSAL and establishes a standard set of COSAL Maintenance Records;
c) Verifies the accuracy of the SOH configuration baseline by comparing the SOH Weapon Systems File Configuration Output (WSFCO) with other sources of configuration data including, but not limited to:
    1. The ship's current inventory of test equipment;
    2. Validation aids and reports reflecting the results of the SECAS validation effort;

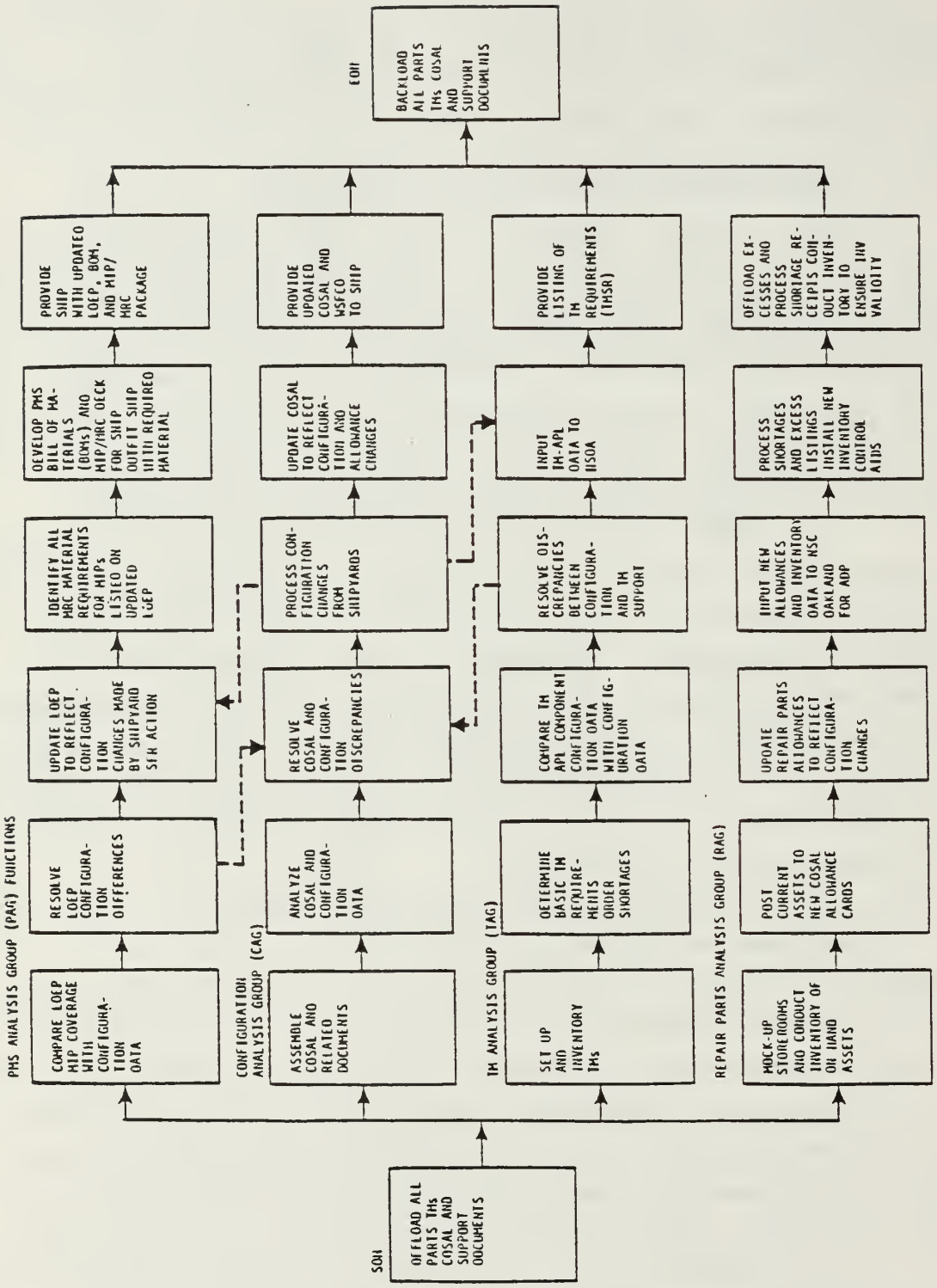

Figure 3.2 Overview of ILO Analysis Group Functions. [Ref. 5: p. 5-2]

3. The NSAs listing of planned configuration changes provided to SPCC for WSF update;
4. Ship's Configuration Change Form (CCF) File; and
5. The ship's old COSAL.

d) Compares the verified SOH WSFCO, with differences highlighted, to the SOH COSAL to identify total differences between the ship's configuration reflected in the SOH WSFCO, ship's old and new COSALs and other documentation;
e) Reconciles differences in configuration data through various aids and, if required, a sight verification of ship's equipment;
f) Provides the other Analysis Groups with SOH configuration documentation and all subsequent updates;
g) Submits data to the NSA for configuration changes generated by the Analysis Groups and ship's submitted OPNAV 4790/CKs;
h) Maintains the verified WSFCO, SOH COSAL and other documentation to reflect NSA reported overhaul changes; and
i) Processes verification requests for possible configuration errors detected by the TM, PMS and Repair Part Analysis Groups. [Ref. 1: pp. 14-15]

2. PMS Analysis Group (PAG)

The Navy's Planned Maintenance System (PMS) can be effective only if the necessary documentation and related repair parts are available to the technician when they are needed. The PMS analysis task is to ensure that the CAG provided configuration baseline and changes thereto, are supported with the correct PMS documentation and required materials.

The PAG is responsible for all matters related to the PMS analysis function which are detailed in the ILO

Policy and Procedures Manual, Volume 4, Planned Maintenance System Analysis Procedures. To meet the objective of the PMS analysis function the PAG performs the following:

a) Maintains close liaison with the ship's 3M coordinator and the NAVSEACEN in all matters related to PMS support analysis;
b) Ensures all documents and aids required to perform PAG procedures are available;
c) Verifies PMS support of the CAG providing configuration data through the following processes;
    1. Identifies Maintenance Index Pages (MIPS) applicable to the configuration baseline to establish MIP requirements;
    2. Compares established MIP requirements to the ship's current PMS-4 (MIP to Work Center File) and PMS-5 (List of Effective Pages (LOEP));
    3. Identifies differences between configuration data reflected in the ship's current PMS documentation and the COSAL and provides the results to the CAG for resolution; and
    4. Updates PMS support documentation to reflect resolutions of differences and provides input to the NAVSEACEN.
d) Analyzes Maintenance Requirement Cards (MRCs) to ensure the COSAL reflects the required repair parts, and to ensure repair parts, special tools and test equipment are identified for proper PMS support; and
e) Ensures the updated and completed PMS support documentation is provided to the ship at end of availability. [Ref. 1: pp. 16-17]

3. Technical Manual Analysis Group (TAG)

Proper technical manuals provide the maintenance technician with the initial documentation used to identify

the technical and material requirements for performing both corrective and planned maintenance. Frequently, ships are either missing required TMs or the TMs do not match the ship's configuration of equipments/components. The TM analysis task is to ensure that all TM requirements supporting the configuration baseline are identified and action taken to provide them to the ship.

The TAG is responsible for ensuring that the TM analysis function is carried out in accordance with the ILO Policy and Procedures Manual, Volume 3, Technical Manual Procedures. To meet the objectives of the TM analysis function the TAG performs the following:

a) Ensures all documents and aids required to perform TAG procedures are available;
b) Inventories and records the ship's off-loaded Technical Manuals;
c) Performs an analysis using the CAG provided SOH COSAL, Publications Applicability List (PAL) and other documentation to identify the ship's TM requirements;
d) Compares TM requirements to the ship's inventory and takes action to order shortages or excess as necessary;
e) Establishes TM to APL relationships to identify differences between TM data and COSAL support;
f) Coordinates with the CAG on the reconciliation of differences and required corrective action (TM or configuration);
g) Incorporates into the TM inventory all TMs received during the availability;
h) Provides results of the TM analysis effort to the Naval Sea Data Support Activity (NSDSA); and
i) Ensures that at least two copies of each TMs required to support the ship's configuration are available or on order. [Ref. 1: pp. 17-18]

4. Repair Parts Analysis Group (RAG)

The accomplishment of corrective and planned maintenance requires adequate repair parts support. The repair part analysis task is to ensure that the ship's off-loaded repair parts assets are inventoried, documented and adjusted to meet allowances. The goal of the repair parts function is to provide 100% of the repair parts allowances (on board or on order) to support the CAG provided and maintained configuration baseline at the end of the availability.

The RAG is responsible for all matters related to repair parts support and for performance of all functions as specified in the ILO Policy and Procedures Manual, Volume 6, Repair Parts Analysis. To meet the objectives of the repair parts function the, RAG performs the following:

a) Inventories and records the ship's repair parts assets off-loaded to the ILO site (to include the ship's inventory of bulkhead mounted spares, Maintenance Assistance Modules (MAMs) and Ready Service Spares (RSS) retained on board);
b) Compares the ship's assets to the allowances established supporting the configuration baseline in the SOH COSAL;
c) Adjust allowances of repair parts to support documented configuration changes;
d) Adjusts allowances as necessary based on equipments removed, installed or modified during the availability;
e) Submits required documentation identifying revised allowances and assets to the Naval Supply Center, Oakland for Automatic Data Processing (ADP) (non-mechanized ships only) for processing;
f) Processes the repair parts ADP products from NSC Oakland;

g) Identifies shortages, orders the associated repair parts, and processes received repair parts to inventory;
h) Processes excess repair parts for turn in ashore; and
i) Backloads the ship's repair parts upon completion of the availability. [Ref. 1: pp. 18-19]

G. INTERACTION WITH EXTERNAL ACTIVITIES

Various components of the Naval Material Command (NMC) have functional and procedural responsibilities to the ILO process. The ILO interaction with these components, through directives and established interfaces, provides direct support and assistance to the ILO as follows:

a) Automatic distribution to the ILO site of required documentation and aids;
b) Technical assistance in resolving systemic configuration and logistic support problems detected during the ILO; and
c) Update of configuration and support documentation in existing systems external to the ILO sites.

The components of the NMC and their functional and procedural responsibilities are identified in following sections. [Ref. 1: p. 19]

1. Naval Supervising Activity (NSA)

The cognizant Naval Shipyard or SUPSHIP is responsible for the following functions:

a) Performing configuration status accounting and acting as the control agent for configuration changes during the availability;
b) Certifying delivery of ILS elements to support SHIPALT related configuration changes;

c) Documenting and certifying configuration changes accomplished by the shipyard and ship and changes resulting from the ILO site analysis efforts;
d) Submitting configuration change documents to the ILO site periodically during the availability and to SPCC at the end of availability for WSF update;
e) Providing required Allowance Parts List (APLs), Allowance Equipage List (AELs) and Allowance Appendix Pages (AAPs) to the ILO site for processing; and
f) Delivering to the ILO site all TMs, repair parts, test equipment, operating space items and other support elements received in support of shipyard accomplished changes. [Ref. 1: pp. 19-20]

2. Naval Sea Data Support Activity (NSDSA)

The NSDSA is responsible for:
a) Developing both manual and mechanized TM data exchanges between the ILO Program and the Ship's Technical Publications System (STEPS);
b) Incorporating into the STEPS data base, APL to TM relationships determined by ILO sites and audited by the NSDSA;
c) Providing technical assistance to ILO sites in matters relating to TMs;
d) Correcting ILO identified TM deficiencies; and
e) Producing and providing an updated Publications Applicability List (PAL), reflecting TM to APL relationships at the end of availability for all ships undergoing ILO. [Ref. 1: p. 20]

3. NAVSEACEN

The appropriate NAVSEACEN is responsible for:
a) Providing SECAS validation results and CSA technical assistance to the ILO sites;

b) Supporting PMS documentation update efforts of the ILO sites;
c) Providing for distribution of required PMS documentation:
   1. MIPs and MRCs;
   2. PMS-4, PMS-5 and the Automated Library Issue Document (ALID); and
   3. PMS-9,10 and 11 series reports.
d) Updating PMS support requirements through Semi-Annual Force Revisions (SFR) of the PMS-4 and PMS-5. [Ref. 1: p. 20]

4. SPCC

The Ship's Parts Control Center is responsible for:
a) Providing to the ILO site prior to a ship's scheduled availability:
   1. SOH COSALs, mini-COSALs, configuration data reports, repair parts inventory aids and other support documentation required; and
   2. APLs/AELs missing from the SOH COSALs.
b) Updating the WSF upon completion of the availability to reflect NSA, ship and ILO reported configuration changes; and
c) Assisting in technical matters related to WSF configuration data and repair parts support. [Ref. 1: pp. 20-21]

5. Naval Supply Center, Oakland

NSC, Oakland provides centralized ADP services and procedures to all ILO sites for the repair parts inventory (non-mechanized ships) as follows:
a) Processes the ILO prepared Master Deck (supply availability cards) which identifies ship's allowances of repair parts and inventoried assets;

b) Provides the ILO site with a series of ADP products based on the ILO Master Deck data. This includes, but is not limited to:
   1. Integrated Stock List (ISL) reflecting ship's retained repair parts, allowances, location, etc.;
   2. Shortage Listing reflecting repair parts allowance shortages;
   3. Excess Listing reflecting ship's assets of repair parts in excess of allowance; and
   4. New Stock Record Cards (NAVSUP Form 1114m) and Afloat Locator/Inventory Cards (NAVSUP Form 1075) for use in conducting an inventory prior to back-load of repair parts and eventual turn over of cards to the ship.

c) Processes ILO submitted change transactions (changes occurring after receipt of initial ADP products) and repair parts allowance changes; and

d) Provides a post-overhaul Integrated Stock List (ISL). [Ref. 1: p. 21]

H. ILO PRODUCTS

The end result of a properly conducted ILO is significantly improved material readiness. Literally hundreds of actions are performed during the ILO to ensure the accuracy of the ship's post-overhaul configuration and attendant logistics support. The result of the ILO processes is reflected in numerous updated or newly developed documents and products which are turned over to the ship upon completion of the ILO. The ILO Policy and Procedures Manual identifies in detail all ILO provided products. This section lists, by function, the primary products resulting from the ILO. [Ref. 1: p. 22]

1. Updated COSAL Products

The Configuration Analysis and COSAL Maintenance function reconciles the SOH COSAL configuration data with PMS, TM, SECAS validation data and other sources of configuration data to detect and correct errors in the SOH COSAL and incorporate all configuration changes occurring during the availability. The following products will be provided at EOH:

a) Updated SOH COSAL. New or updated parts and sections of the ship's SOH COSAL.

b) COSAL Maintenance Records. Standard records developed during the ILO that reflect all maintenance actions to the SOH COSAL.

c) Summary List of Component Changes/Summary List of Equipage Changes (SLCC/SLEC). A master list, prepared by the NSA, of total configuration changes documented throughout the availability. This document is used by SPCC for update of the WSF after completion of the availability.

d) SOH Weapon Systems File Configuration Output (WSFCO). Lists all ILO applicable records in the WSF at SOH for the ship. Used as the basic configuration verification aid during the ILO. [Ref. 1: p. 22]

2. Updated PMS Support

The PMS Analysis function compares CAG provided configuration data to current PMS requirements and adjusts PMS documentation to reflect changes in requirements. The following products will be provided at EOH:

a) Updated Master PMS MIP/MRC File, which contains a copy of each MIP and associated MRCs listed on the updated LOEP.

b) Updated PMS-4 and PMS-5 (LOEP), which reflects the post-overhaul MIP configuration as adjusted through Semi-Annual Force Revisions.

c) PMS Repair Parts Bill of Materials (BOM), which is provided to the ship approximately one month after EOH. The BOM lists all on board repair parts allowances for PMS required parts. [Ref. 1: pp. 22-23]

3. Technical Manual Support

The TM Analysis function identifies TMs required to support the ship's configuration and ensures TMs required by the ship are either on board or on order. The following products will be provided at EOH:

a) Outstanding/Completed TM Requisition Files, which contains the latest status on outstanding TM requisitions and all completed requisitions for TMs received during the ILO.

b) TM Status Report (TMSR), which lists the TM numbers and component APL data for TMs analyzed during the ILO and which have been determined to be applicable to the ship.

c) Publications Applicability List (PAL), which is produced and provided to the ship approximately four months after EOH by the NSDSA. The updated PAL lists all TMs contained in the TMSR as well as other data applicable to the ship's TMs.

d) Technical Manuals. The ILO site will backload all TMs originally off-loaded (and determined to be applicable) as well as TM deficiencies ordered and received during the ILO. [Ref. 1: p. 23]

4. Repair Parts Support

The Repair Parts Analysis function develops the repair parts load to ensure that the ship's backloaded

repair parts support maintenance requirements. The following principal products are delivered by the Repair Parts Analysis Group (RAG) at EOH. Mechanized ships with Shipboard Uniform Automated Data Processing System (SUADPS) do not receive all of these products since they do not go through the NSC Oakland ADP function.

a) On Board Repair Parts. Backloaded repair parts consist of Storeroom Items (SRI), Depot Level Repairables (DLRs), Field Level Repairables (FLRs), Maintenance Assistance Modules (MAMs) and Ready Service Spares (RSSs). All repair parts are to be properly packaged, preserved, labeled with current stock number and ready for issue. The inventory accuracy is to be no less than 98%.
b) Excess List, which lists items which were part of the original inventory but were off-loaded because they no longer were allowed on board the ship.
c) Marked up Shortage Listing, which reflects repair parts shortages ordered by the ILO site. It is annotated to reflect items received as well as those still outstanding at backload.
d) Other Cards, Records and Listings. New Stock Record Cards, Inventory and Locator Cards, and the Integrated Stock List are developed which provide a composite listing of all EOH repair part allowances. [Ref. 1: p. 23]

I. POST-ILO RESPONSIBILITIES

To maintain the level of configuration and logistics support attained by the ILO requires an ongoing process by shipboard personnel that must be continued after the end of the availability. In addition to reporting configuration changes occurring during the operating cycle, the ship's

responsibilities include a continuing analysis necessary to ensure PMS, TMs and repair parts support stays in synchronization with the ship's configuration.

Through the ILO provided training, ship's force will have developed the knowledge required to use and maintain ILO provided products and will also have the expertise to correct support errors that may be encountered during the operating cycle. The following sections discuss basic configuration reporting and repair parts management requirements. [Ref. 1: p. 24]

1. Configuration Management

During the ship's operating cycle, each ship is responsible for reporting all configuration changes including those accomplished by other than ship's force personnel. A configuration change occurs whenever any system, equipment, component or unit is installed, removed, modified or relocated. The importance of accurate and timely configuration change reporting cannot be overemphasized. If configuration changes are not reported, the ship's configuration data in the Weapon Systems File (WSF) will be inaccurate and vital support elements such as repair parts, TMs and PMS requirements and related allowance documents may not be on hand when needed.

Configuration Change Forms (OPNAV 4790/CKs) are required to report configuration changes. Details for preparation, submission and processing of OPNAV 4790/CKs are provided in the Ship's 3M Manual, Volume 2 and the SECAS Program Manual, Volume 4: Shipboard Operations. [Ref. 1: p. 24]

2. Repair Parts Management

As previously discussed, the reporting of a configuration change results in the update of the ship's

configuration data in the WSF. However, it does not result in an update to the ship's copies of the COSAL. New COSALs are normally produced in conjunction with an overhaul and new COSAL Indices are produced at EOH + 120 days. Therefore, it is the ship's responsibility to maintain the ship's COSAL between overhauls which includes updating of all parts and sections of the COSAL and processing changes in allowances of repair parts.

Proper repair parts management includes the identification of new repair part allowances, changes in existing allowances and identification of repair parts no longer required based upon configuration changes. The specific requirements for COSAL maintenance and repair parts management during a ship's operating cycle are provided in NAVSUP P-485, Supply Afloat Procedures and the COSAL Use and Maintenance Manual (SPCCINST 4441.170). [Ref. 1: p. 24]

J. SUMMARY

This chapter has discussed the four ILO functional areas as well as the pre-ILO and post-ILO procedures. Specific manning requirements and organizational responsibilities were also provided. This information is in a capsulized form as compared to the extreme detail provided in the ILO Policy and Procedures Manual, Volumes 1 to 7. It is evident that the ILO process is complex and dynamic in nature. ILO staff personnel must have requisite experience in their specialties and be able to apply their knowledge to fully comprehend the four ILO functional processes and their importance to shipboard logistics.

IV. WESTERN PACIFIC ILO SITE CAPABILITIES, IMPORTANT ISSUES, AND STERETT ILO PLANS

A. INTRODUCTION

As reviewed in Chapter III, the ILO process is a complicated and intricate set of functions requiring a high degree of technical expertise from all ILO site personnel and the shipboard MSAT members. Given the facts that ILOs are necessary to maintain a high level of shipboard logistic readiness [Ref. 6] and some variation of ILOs will be performed on PMP ships [Ref. 2], a plan must be developed to accomplish the ILO during a four month vice the normal eight to ten month period. Exact plans to accomplish this task for WESTPAC homeported ships have not been finalized. [Refs. 7,8,9] However, with the proper personnel and support from the ILO chain of command and the ship's Commanding Officers, a full scale ILO could be accomplished for each WESTPAC homeported PMP ship. [Refs. 7,8] Figure 4.1 provides a listing of all WESTPAC homeported ships.

Yokosuka, Japan		Guam	
Midway	CV-41	*White Plains	AFS-4
* Blue Ridge	LCC-19	*San Jose	AFS-7
Reeves	CG-24	*Niagara Falls	AFS-3
Towers	DDG-9	Proteus	AS-19
Cochrane	DDG-21		
Knox	FF-1052	Subic Bay, R.P.	
Lockwood	FF-1064		
Francis Hammond	FF-1067	*Sterett	CG-31
Kirk	FF-1087		

* Indicates PMP ships

Figure 4.1 Western Pacific Homeported Ships.

The remaining sections of this chapter will examine the manning and experience levels of the WESTPAC ILO sites at

Yokosuka, Guam, and Subic Bay, current plans for the upcoming Sterett ILO, and important issues for consideration in conducting ILOs in four months. The problem areas and issues to be discussed in this chapter will provide the background and justification for the recommendations provided in Chapter V.

B. WESTPAC ILO SITE CAPABILITIES

1. Subic Bay, R.P.

The Subic Bay ILO site has been allocated one E-7 storekeeper billet which is presently filled by an E-6. The Assistant Director of Inventory Control for Ship's Systems (Supply Corps 0-3) at NSD Subic Bay has been assigned as the OIC, Subic Bay ILO site, as a collateral duty. Contingency plans exist which will add up to two or three additional E-5/E-6 storekeepers from NSD Subic Bay to supplement the ILO staff as required. Adequate facilities are available and no problems are foreseen. [Ref. 9]

The OIC has had no experience with the actual performance of an ILO but the E-6 storekeeper has participated in two attack submarine ILOs. Both were nine months long and were accomplished in Subic Bay. Also, he has accomplished a cross-check verification of SPCC configuration data against the Sterett COSAL indices. The contingency plan personnel will have little or no experience with ILOs. However, a team of Pacific Fleet ILO experts are scheduled to conduct intensive training for the Subic Bay ILO staff personnel in July 1985. [Ref. 9]

2. Guam

The Guam ILO site has been authorized two permanent billets; one E-7 storekeeper and one GS-7 civilian. The NSD Guam Inventory Control Director (Supply Corps 0-4) and the

Deputy Inventory Control Director (GS-12) have been assigned as the Guam ILO Site OIC and AOIC, respectively, on a collateral duty basis. The only experience this site has had with the ILO process was the conduct of an ILO for the floating drydock at the Naval Ship Repair Facility (NSRF), Guam. A new building was recently constructed for the ILO site providing them with excellent facilities. [Ref. 8]

3. Yokosuka, Japan

The Yokosuka ILO site has authorized allowances for E-7, E-6, and E-5 storekeepers. The NSD Yokosuka Requirements Division Director (Supply Corps 0-3) is assigned as the Yokosuka ILO site OIC. The existing facilities and manning are adequate but additional manning and facilities would be required if the ILO site's workload increased above the present level of working on one ship at a time. The experience level of the ILO staff personnel is excellent due to the fact that SOAPs and ILOs have been performed at this site for the Yokosuka homeported ships (except USS Midway) for many years. Although all ILOs performed have been the standard length of nine to ten months for non-PMP ships, no serious problems are foreseen in accomplishing a four month ILO on the Yokosuka homeported PMP ship, the USS Blue Ridge. [Ref. 7]

C. USS STERETT BACKGROUND AND CURRENT ILO PLANNING

1. Background

The USS Sterett moved to its present homeport, Subic Bay, R.P., in August 1981 and is the only U.S. Navy ship homeported in the Philippines. Original planning for the conduct of the Sterett Regular Overhaul (ROH) included sending the USS Horne (CG-30) to Subic Bay and returning the Sterett to a west coast shipyard for ROH during 1985. Then

the plans were revised to have the NSRF Subic Bay conduct a 15 month ROH thereby eliminating the need to shift homeports of both the Sterett and Horne. The last major change to the Sterett overhaul plans was to place the ship in the Phased Maintenance Program along with the three AFSs in Guam and the Blue Ridge in Yokosuka. Presently, the Sterett has completed two SRAs since 1983 and will conduct the DSRA in 1985. The DSRA has been targeted as the period to accomplish the ILO. [Ref. 10]

2. USS Sterett's Unique Situation

There are several noteworthy factors which should be considered germane to the discussions of the Sterett logistics support. The combination of these factors clearly distinguish the Sterett as a unique case with respect to accomplishing an ILO.

First, the Sterett is the only ship homeported in the Philippines and is the only combatant ship in the Phased Maintenance Program in WESTPAC. In addition, there are insufficient experience and knowledge available for determining if it is feasible and, if so, how to conduct an ILO during a DSRA. [Ref. 2] The ILOs for combatant ships can be expected to be much harder to accomplish than those for support ships such as AFSs in the PMP due to the increased complexity and quantity of shipboard systems and resulting repair parts line items, technical manuals, and PMS documentation. Second, the Sterett is an integral part of the permanently deployed carrier (USS Midway) task force in WESTPAC and thus represents a key part of the frontline Seventh Fleet naval assets. These ships are required to maintain the highest possible material and operational readiness standards in order to respond to operational tasking from the Commander, U.S. Seventh Fleet. Similarly, the highest possible logistics readiness should be maintained

onboard Sterett to support these operational requirements. Third, the other PMP combatant ships in the Navy currently scheduled to conduct ILOs during a SRA are included under the NAVSEA test program cited earlier in Chapter II, Section F. As a consequence, they will conduct their ILOs at large, expertly staffed ILO sites and contractor support personnel will be provided to accomplish one or more of the ILO functional analyses, thereby reducing the MSAT workload. [Ref. 2] In contrast, the Sterett will conduct its ILOs at the relatively inexperienced Subic Bay ILO site with a largely ad hoc staff and the MSAT will not be augmented with contractor support.

3. Current Sterett ILO Plans

The USS Sterett is scheduled to start its first ILO in Subic Bay in September 1985. The Subic Bay ILO OIC recently attended the WESTPAC ILO Conference in San Diego with representatives from COMNAVSURFPAC and COMNAVLOGPAC where they discussed the Sterett ILO plans. The COMNAVSURFPAC representative advised the Subic Bay OIC that contractor support would not be provided to augment the MSAT due to the poor performance record of the contractor supported ILOs as previously discussed in Chapter II, Section F. He also advised the Subic Bay OIC that the CAG and RAG ILO functions should be performed as the minimum effort during the four month DSRA in 1985, leaving the PAG and TAG functions to be performed during the next annual SRA. The final determination as to the extent of the ILO beyond this minimum will have to be negotiated between the Sterett CO and the Subic Bay ILO OIC. [Ref. 9] Depending upon the extent of the ILO plans, the ILO OIC will decide how many additional NSD Subic Bay storekeepers will be required to augment the ILO site staff.

If the decision is made to attempt a complete ILO, COMNAVLOGPAC is considering sending an ILO expert from one of the west coast ILO sites to assist the Subic Bay ILO staff. The ILO expert would be responsible for ensuring that the ILO gets properly started and that it the performs at an acceptable level. More exact plans are not yet available as it is still relatively early in the pre-ILO planning stage. [Ref. 9]

4. Current Status Of The Sterett ILO

Chapter III provided a review of the many tasks and responsibilities of the various activities associated with pre-ILO planning, ILO execution, and post-ILO processes. While it is still relatively early in the pre-ILO planning stages, everything is progressing in proper fashion. The long range plans and coordination efforts of SPCC have been formalized in a Plan of Action and Milestones distributed to the various commands involved with the development of the Sterett SOH COSAL. [Ref. 11] All other pre-ILO plans appear to be in order.

Although the ILO execution and post-ILO phases are still in the future, an evaluation of existing plans and expected capabilities versus the tasks and responsibilities cited in Chapter III has been accomplished. This evaluation detected two major areas of consideration affecting the ILO execution phase; the quantity and quality of the WESTPAC ILO site staffs, and the MSAT manning levels. These two areas of concern will be addressed below.

D. IMPORTANT ISSUES OF WESTPAC FOUR MONTH ILOS

There are two principal areas of concern apparent when considering accomplishing ILOs on WESTPAC homeported PMP ships. The first issue is the quality and quantity of the

ILO site staffs at Guam and Subic Bay. The Yokosuka ILO site has a firmly established ILO program in effect and thus is considered fully capable of handling the ILO requirements of the Blue Ridge and is not included as part of this issue. [Ref. 7] The second issue is that of MSAT manning levels and pertains to all three WESTPAC ILO sites. How these issues are handled will determine whether the Sterett ILO will be either completed during the DSRA or only partially completed during this period and then finally completed during the next SRA.

In discussing these issues, specific attention will be provided relative to the Sterett ILO as well as general discussion pertaining to all the WESTPAC ILO sites.

1. Quantity and Quality of ILO Site Staff

Due to the low demand for ILO services as compared to other Pacific Fleet ILO sites, minimal staffing levels have been provided by COMNAVLOGPAC. Present site manning levels are sufficient for normal workloads such as updating logistics support between SRAs, but are grossly understaffed for peak workloads during four month ILOs. Therefore, when called upon to perform an ILO, the sites must temporarily assign additional manpower in order to accomplish the task. After the ILO is completed, the additional personnel are released to their normal duties.

While assigning additional personnel to fill the supervisory billets of the four ILO functional areas does satisfy the manpower problem, it creates an even more important one. These supervisors have minimal knowledge of and little or no experience in actually performing the ILO. Instead of having a seasoned expert, a relative novice is being tasked with the challenge of compressing a normally eight to ten month task into only four months. This is of particular concern for the Subic Bay and Guam sites. [Refs. 7,8]

In order to improve the level of expertise of the Subic Bay ILO staff, COMNAVLOGPAC plans to send a qualified ILO training team to provide intensive training prior to the start of the Sterett ILO. The possibility of having one of the training team members remain for the first four weeks of the Sterett ILO is under consideration by COMNAVLOGPAC as discussed above. [Ref. 9] These two points of the current Sterett ILO planning might suggest that COMNAVLOGPAC is concerned about the capabilities of the Subic Bay ILO staff. However, the Subic Bay site OIC is optimistic that his staff will be capable of accomplishing a complete ILO in the four months allocated to Sterett. [Ref. 9] The positive attitude of the Subic Bay ILO staff is noteworthy, but the collective past experiences of the Guam and Yokosuka ILO site OICs paints a very different picture indicating that the Subic Bay site lacks both the expertise and manning necessary to conduct a complete ILO. [Refs. 7,8]

2. MSAT Manning Levels

MSAT manning levels contained in Appendix A are based upon eight to ten month ILOs. In order to accomplish a highly compressed four month ILO, additional MSAT manning may be required. The WESTPAC ILO sites have yet to perform a four month complete ILO and other Pacific Fleet ILO sites that have performed four month ILOs have been assisted through contractor support in performing some functions of the ILO. Therefore incomplete information exists on the quantity of MSAT manning necessary for a four month ILO without contractor assistance.

Complicating this issue is the fact that during DSRAs/SRAs much shipboard equipment preventative maintenance is still accomplished by the ship's force technicians as compared to ships in extended overhauls. These competing demands for the ship's force technicians might preclude the

augmentation of the MSAT manning levels above those cited in Appendix A. [Ref. 12] While the manning levels in Appendix A are sufficient for an eight to ten month ILO, they would be inadequate to complete a four month ILO.

The agreement to be negotiated between the Sterett CO and the Subic Bay ILO OIC concerning the extent of the ILO during the 1985 DSRA will most likely depend directly upon the quantity of MSAT personnel provided by the ship. Due to the short period of the DSRA and the lack of contractor support, it would be unreasonable to expect the completion of all four ILO functions with the MSAT manning levels (20 men for a CG) specified in Appendix A. Realistic expectations would include completion of the CAG, RAG, and possibly the PAG functions. However, if the ship could provide an augmented MSAT manning level (in lieu of the contractor support personnel) and the ILO staff could be augmented with expert personnel, it would appear within reason to expect the completion all four ILO functions during the four month DSRA. The benefits derived from conducting a complete ILO could be used to elicit the strong support of the Sterett CO. With his support, the additional manpower could be reassigned from other shipboard tasks to the ILO. Approximately ten more men should be sufficient to complete the ILO in four months. The west coast ILO sites conducting four month ILOs might provide a more experienced estimate of the augmented MSAT manning levels necessary.

E. SUMMARY

The ILO program has been designed to provide improved shipboard logistics readiness and has been a successful tool of the Navy since its evolution. However, the newer methods of shipboard maintenance using annual three and four month SRAs vice longer, less frequent overhauls has caused the ILO

program to re-evaluate and adjust its procedures. This process is still evolving. Although fewer in number and more remotely located from the fully manned and operational west coast ILO sites, the WESTPAC homeported PMP ships face certain problems not evident with their west coast homeported counterparts. These problems were discussed in this chapter along with the WESTPAC ILO sites' capabilities and current plans for the upcoming Sterett ILO. This chapter has provided the background information and important issues of concern to WESTPAC four month ILOs as justification for the long term recommendations for WESTPAC homeported PMP ship ILOs and short term recommendations for accomplishing the upcoming Sterett ILO contained in Chapter V.

V. SUMMARY, CONCLUSION AND RECOMMENDATIONS

A. SUMMARY

Chapter I indicated that this thesis sought to answer the questions, "What are the plans for accomplishing Integrated Logistic Overhauls on Phased Maintenance Program (PMP) ships homeported in the Western Pacific?" and "In particular, what are these plans for the USS Sterett?" These questions came as a result of the author receiving orders to the USS Sterett as Supply Officer, subsequent investigation of Sterett's pending ILO, and discussions with COMNAVSURFPAC personnel involved in the ILO planning process.

To assist in laying the groundwork for this study, Chapter II reviewed the ILO and ILR processes and overall program responsibilities. Chapter III provided a summary of the four ILO functional processes, tasks, and responsibilities of all organizations involved with the ILO. While that presentation appears to be rather detailed, it emphasizes the intricate interworkings of the extremely complex ILO process. In Chapter IV, existing WESTPAC ILO capabilities were described as well as current plans for the Sterett ILO and an analysis of important issues affecting the WESTPAC ILOs in general.

B. CONCLUSION

The evolutionary process of ILO/ILR for PMP ships is still continuing through evaluation the results of ships recently completing and others currently undergoing four month ILOs. The effectiveness of the actual ILO procedures employed will take some time to be evaluated so that future

plans and refinements can be developed and implemented. In the interim, relatively close adherence to established ILO procedures has been observed by the West coast ILO sites. However, the relatively understaffed and inexperienced Guam and Subic Bay ILO sites will be expected to either accomplish the four month ILO without any contractor support (in contrast to that received by the west coast ILO sites) or complete the ILO over the span of several SRAs. While splitting the ILO functions such that several successive annual SRAs would be needed to complete the ILO represents a logical and realistic approach to completing the ILO, it is less desirable due to the potential degradation of the logistics readiness of frontline Seventh Fleet naval assets.

C. SHORT TERM RECOMMENDATIONS FOR THE STERETT ILO

1. MSAT Manning Levels

The Sterett CO should carefully evaluate the present problems and potential improvements in logistics support against the operational needs of the ship, DSRA workload, and available personnel assets to determine whether augmented or standard MSAT manning should be used for the ILO. Based upon this decision, the extent of the ILO will be determined. If augmented MSAT manning is provided, a complete ILO could be conducted. But if the normal MSAT manning is provided, the CAG, RAG, and possibly the PAG functions could be completed. This would require the remaining functions to be completed during the next annual SRA.

2. Subic Bay ILO Staff Augmentation

Dependent upon the level of MSAT manning, and the scope of ILO functions to be performed, COMNAVLOGPAC should augment the Subic Bay ILO staff with one expert of E-7 to

E-9 pay grades for each of the ILO functions being performed. These personnel would provide the necessary overall coordination and technical expertise to provide effective and efficient supervision ensuring smooth execution of the ILO.

3. Funding Support

COMNAVLOGPAC should fund or obtain funding for the per diem and travel expenses to be incurred through implementation of the second recommendation. This relatively small expense should be easily justified by the improved logistics readiness of the Sterett.

D. GENERAL RECOMMENDATIONS FOR WESTPAC ILOS

1. Centralize the WESTPAC ILO Function

COMNAVLOGPAC should initiate a study to evaluate the feasibility of tasking the Yokosuka ILO site with performing ILOs for all WESTPAC homeported ships. This would require augmentation of the Yokosuka ILO staff. However, due to workload balances between the WESTPAC Naval Ship Repair Facilities (NSRFs) in Yokosuka, Guam and Subic Bay and other considerations, the four month DSRAs and ILOs should still be performed in the various ships' homeports. This would require the Yokosuka ILO site to send several of their staff members on temporary additional duty to augment the existing Guam or Subic Bay ILO site staffs for the duration of a ship's ILO. This would be required only once every five years for each of the four non-Yokosuka homeported PMP ships and could be easily incorporated with the NSRF DSRA schedules. During the years between ILOs, each ship would accomplish an ILR under the supervision of the presently existing ILO site staffs at Subic Bay and Guam.

2. ILO Site Staffing

COMNAVLOGPAC should investigate the possibility of replacing appropriate ILO site enlisted storekeepers with civil service personnel. This would provide for better continuity of the specialized skills needed to perform ILOs and ILRs.

3. ILO Program Planning and Funding

COMNAVLOGPAC should work with NAVSEA and the WESTPAC ILO sites to develop a viable, comprehensive plan to ensure these sites are competent and capable to perform their complex tasks. Based upon this plan, COMNAVLOGPAC should request full funding via the planning, programming, and budgeting system process.

APPENDIX A

MSAT MANNING REQUIREMENTS GUIDE

[Ref. 5: pp. 3-8 to 3-9]

SHIP TYPE	FUNCTION	ENGINEERING					WEAPONS				OPERATIONS											TOTAL	NOTES
		HM	EM	HT/IC	BT	EN	FT	GM	AO	ABE	ET	RM	OS	EW	ST	SK	SN	FN	BM	DP	TM		
CV	CAG	1	1	1	1	1	1	1	1	1	1			1		2						13	1
	RAG			1								1	3			1	1	2	1			10	2
	PAG	1						1						1								3	
	TAG	1	1		1		1				1			1								6	
	TOTAL	3	2	2	2	1	2	2	1	1	2	1	3	3		3	1	2	1			32	
LPH LHA	CAG	1	1	1	1	1	1		1		1					1						9	2
	RAG		1									1	1			1			1			5	
	PAG	1						1						1								3	
	TAG	1					1	1			1											4	
	TOTAL	3	2	1	1	1	2	2	1		2	1	1	1		2			1			21	
CG CGN	CAG	1	1	1	1		1	1			1			1	1	1						10	3
	RAG											1	2			1						4	
	PAG	1					1							1								3	
	TAG	1						1			1											3	
	TOTAL	3	1	1	1	1	2	2			2	1	2	2	1	2						20	
FF FFG DD DDG	CAG	1			1		1				1					1						5	4
	RAG													1		1						2	
	PAG		1				1								1							3	
	TAG	1						1						1								3	
	TOTAL	2	1		1		2	1			1			2	1	2						13	
SSN	CAG	1									1				1	1					1	5	5
	RAG		1												1							2	
	PAG			1																		1	
	TAG	1	1								1											3	
	TOTAL	2	2	1							2				2	1					1	11	
AOE AOR AO AE	CAG	1			1		1							1		1						5	6
	RAG							1				1	1			1			1			5	7
	PAG		1								1											2	
	TAG	1	1																			2	
	TOTAL	2	2		1		1	1			1	1	1	1		2			1			14	

NOTE - Most of the technicians cited above for manning requirements of the CAG will supplement the RAG throughout the overhaul/availability. Based upon their technical background, they will be assigned to the CAG on an as-required basis.

SHIP TYPE	FUNC-TION	ENGINEERING					WEAPONS				OPERATIONS												TOTAL	NOTES
		MM	EM	MT/IC	BT	EN	FT	GM	AO	ABE	ET	RM	OS	EW	ST	SK	SN	FN	BM	DP	TM			
LPD, LPA LSD, LST LKA	CAG	1			1	1		1								1							5	11
	RAG												1	1		1							3	
	PAG	1					1																2	
	TAG		1								1												2	
	TOTAL	2	1		1	1	1	1			1		1	1		2							12	
LCC	CAG	1			1			1			1	1		1		1							7	
	RAG			1								1	2	1		1							6	
	PAG	1					1					1											3	
	TAG		1			1					1												3	
	TOTAL	2	1	1	1	1	1	1			2	3	2	2		2							19	
AFS	CAG	1	1		1	1	1				1					2				1			9	2,10
	RAG											1	1			10			1				13	6
	PAG	1		1			1																3	7
	TAG	1	1					1			1												4	8
	TOTAL	3	2	1	1	1	2	1			2	1	1			12			1	1			29	9
AS AR AD	CAG	2	1		1		1				1	1				1				1			9	2,16
	RAG											1	1			5	3		1				11	12
	PAG	1	1				1							1									4	13
	TAG	2	2	1	1	1	1	1			1				1						1		12	14
	TOTAL	5	4	1	2	1	3	1			2	2	1	1	1	6	2		1		1		36	15
MISC. SHIP TYPES (ILO SITE COMPLETE)	CAG																							
	RAG																							
	PAG																							
	TAG																							
	TOTAL																							
MISC. SHIP TYPES (ILO SITE COMPLETE)	CAG																							
	RAG																							
	PAG																							
	TAG																							
	TOTAL																							

NOTE - Most of the technicians cited above for manning requirements of the CAG will supplement the RAG throughout the overhaul/availability. Based upon their technical background, they will be assigned to the CAG on an as-required basis.

APPENDIX B
NOTES FOR THE MSAT MANNING REQUIREMENTS GUIDE [Ref. 5: pp. 3-10 to 3-11]

Note	Remarks
1	NUCLEAR POWERED CARRIERS: Add four nuclear trained technicians for Q-COSAL. Add one SK for Q-COSAL maintenance.
2	MECHANIZED SHIPS: One of the SKs will be a Senior Petty Officer fully qualified in Shipboard Uniform Automated Data Processing System (SUADPS). He will coordinate development of the new Master Record File (MRF) with the Ship's Supply Department and ensure all ILO-generated SUADPS transactions are properly processed.
3	NUCLEAR POWERED CRUISERS: Add two nuclear trained technicians for Q-COSAL. Add one SK who will be assigned Q-COSAL maintenance responsibilities. Delete the requirement for a BT.
4	GAS TURBINE POWERED SHIPS: Replace the BT with a GS.
5	NUCLEAR SUBMARINES: Of those listed, two engineering ratings must be nuclear qualified.
6	UNDERWAY REPLENISHMENT (UNREP) SHIPS: Of those listed, at least one technician must be qualified in UNREP equipment repair.
7	AUTOMATIC PROPULSION SHIPS: Of those listed, at least one technician must be qualified in automatic propulsion systems.
8	COMBAT STORES SHIPS (AFS): All AFSs are currently programmed for Reduced Scope Overhauls (RSO) of approximately 16 weeks duration under the Phased Maintenance Program. A full ILO will be conducted, but with slightly modified procedures. Manning may be adjusted to compensate for the highly compressed ILO schedules. Other auxiliaries may later be scheduled for RSOs.
9	COMBAT STORES SHIPS (AFS): One technician assigned must be qualified in cargo refrigeration equipment.
10	COMBAT STORES SHIPS (AFS): Maintenance ratings assigned are primarily for non-RAG functions. If load list material is included in the ILO process, the RAG must be augmented with additional storekeepers and/or contractor personnel for load list inventory and purification.
11	AMPHIBIOUS SHIPS: Ships outfitted with troop transport LCMs will require one LCM qualified EN for the Boat Haven COSAL.

Note	Remarks
12	TENDERS AND REPAIR SHIPS: Four technicians must be from the Repair Department for purposes of verifying shop equipment support. One HT and one MR may be substituted for other engineering ratings indicated.
13	TENDERS AND REPAIR SHIPS: The requirement for a GM applies to ADs only.
14	TENDERS AND REPAIR SHIPS: Manning requirements assume the complete tender technical manual library will be analyzed during the ILO.
15	REPAIR SHIPS (AR): Depending upon shop capabilities, AR manning requirements may be reduced somewhat relative to AS/AD requirements.
16	DESTROYER TENDERS (AD): Tenders with gas turine repair capability require a GS in lieu of one of the other engineering ratings listed.

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7. LT William R. Lavender, SC, USN, NSD Yokosuka, Japan Code 101, Requirements Division Director and OIC Yokosuka ILO Site (March 1983-June 1984), interview, 5 December 1984.

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9. LT David M. Parnell, SC, USN, NSD Subic Bay, R.P. Code 1011, Assistant Director of Inventory Control for Ship's Systems and OIC Subic Bay ILO Site, telephone interview, 5 December 1984.

10. LCDR Kevin G. Mercier, SC, USN, COMNAVSURFPAC Code 715, Shipboard Systems Management, telephone interview, 10 July 1984.

11. SPCC Mechanicsburg, PA message, "Pre-Availability COSAL for USS Sterett (CG-31)", 260955Z September 1984.

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